

Appl. No. : 09/401,874  
Amendment Dated : November 14, 2003  
Reply to Office Action of : August 27, 2003

Atty. Docket No. 113794.124 US1

**Listing of Claims:**

---

C/ 1. (previously presented) A method of troubleshooting a network that includes a plurality of devices, said method comprising:

attempting to communicate with a target device among the plurality of devices, said target device having a neighbor;

if the attempt to communicate with the target device fails, determining if the target device has an active neighbor by attempting to communicate with said neighbor; and

if it is determined that said neighbor is an active neighbor, identifying the target device as a failed device.

2. (previously presented) The method according to claim 1, wherein the method is implemented by a computer on the network.

3. (previously presented) The method according to claim 2, wherein determining if the target device has an active neighbor comprises:

identifying a neighbor of the target device;

attempting to communicate with the identified neighbor of the target device; and

if the attempt to communicate with the identified neighbor is successful, concluding that the identified neighbor is active.

4. (previously presented) The method according to claim 2, further comprising locating a neighbor of the target device.

5. (previously presented) The method according to claim 4, wherein the locating comprises:

generating a neighbor table for the network; and

consulting the neighbor table to locate the neighbor of the target device.

C/

Appl. No. : 09/401,874  
Amendment Dated : November 14, 2003  
Reply to Office Action of : August 27, 2003

Atty. Docket No. 113794.124 US1

6. (previously presented) The method according to claim 5, wherein the generating comprises:

polling the target device;  
receiving a response from the target device; and  
constructing the neighbor table based on the response.

7. (previously presented) The method according to claim 6, wherein:  
the polling is performed periodically; and  
the method further comprises updating the neighbor table based on the periodic polling.

8. (previously presented) The method according to claim 6, wherein:  
the response comprises a network address of the neighbor; and  
the neighbor table indexes the target device to the network address of the neighbor.

9. (previously presented) The method according to claim 8, wherein the target device:  
stores a Management Information Base (MIB) II table containing the network address of the neighbor; and  
prepares the response based on the MIB II table.

10. (previously presented) The method according to claim 2, wherein the target device comprises a router or a switch, and the neighbor comprises a router, a switch, or a computer.

<sup>13</sup>  
~~11~~. (previously presented) A method of troubleshooting a network that includes a plurality of devices, said method comprising:

- receiving information from the plurality of devices;
- generating a neighbor table for the network based on the information provided by the plurality of devices; and
- attempting to communicate with a target device among the plurality of devices to determine if the target device is active;

wherein, if the target device is determined to be not active, the method further comprises:

- using the neighbor table to identify a neighbor of the target device;
- attempting to communicate with the identified neighbor to determine if the identified neighbor is active; and
- if the identified neighbor is determined to be active, identifying the target device as a failed device.

<sup>16</sup>  
~~12~~. (previously presented) An apparatus for troubleshooting a network that includes a plurality of devices, said apparatus comprising:

- a host computer including a processor; and
- a memory which stores executable code which when executed by said processor causes said host computer to (i) attempt to communicate with a target device among the plurality of devices, said target device having a neighbor, (ii) if the attempt to communicate with the target device fails, determine if the target device has an active neighbor by attempting to communicate with said neighbors, and (iii) if it is determined that said neighbor is an active neighbor, identify the target device as a failed device.

<sup>17</sup>  
~~13~~. (previously presented) The apparatus according to claim <sup>16</sup>~~12~~, wherein the processor attempts to communicate with the target device by sending a packet to the target device and waiting for a response from the target device.

<sup>18</sup>  
~~14~~. (previously presented) The apparatus according to claim ~~12~~<sup>16</sup>, wherein:  
the processor determines if the target device has an active neighbor by attempting to  
communicate with a neighbor of the target device; and  
the neighbor is determined to be active if the attempt to communicate is successful.

<sup>19</sup>  
~~15~~. (previously presented) The apparatus according to claim ~~12~~<sup>16</sup>, wherein the processor  
executes code to locate a neighbor of the target device.

<sup>20</sup>  
~~16~~. (previously presented) The apparatus according to claim ~~15~~<sup>19</sup>, wherein the processor  
locates the neighbor by:  
generating a neighbor table for the network; and  
consulting the neighbor table.

<sup>21</sup>  
~~17~~. (previously presented) The apparatus according to claim ~~16~~<sup>20</sup>, wherein the processor  
generates the neighbor table by:  
polling the target device;  
receiving a response from the target device; and  
constructing the neighbor table based on the response.

<sup>22</sup>  
~~18~~. (previously presented) The apparatus according to claim ~~17~~<sup>21</sup>, wherein the processor  
performs the polling periodically and updates the neighbor table based on the periodic polling.

<sup>23</sup>  
~~19~~. (previously presented) The apparatus according to claim ~~17~~<sup>21</sup>, wherein:  
the response comprises a network address of the neighbor; and  
the neighbor table indexes the target device to the network address of the neighbor.

<sup>24</sup>  
~~20~~. (previously presented) The apparatus according to claim ~~18~~<sup>16</sup>, wherein the target device  
comprises a router or a switch, and the neighbor comprises a router or a switch.

<sup>21</sup>  
~~21~~. (previously presented) A computer program stored in a computer-readable medium, said program for troubleshooting a network that includes a plurality of devices, said program comprising:

code for attempting to communicate with a target device among the plurality of devices, said target device having a neighbor;

code for determining if the target device has an active neighbor in response to a failure of an attempted communication with the target device, said code for determining causing an attempt to communicate with said neighbor; and

code for identifying the target device as a failed device if said neighbor is determined to be an active neighbor.

<sup>28</sup>  
~~22~~. (previously presented) The computer program according to claim <sup>27</sup>~~21~~, wherein the attempting code sends a packet to the target device and waits for a response from the target device.

<sup>29</sup>  
~~23~~. (previously presented) The computer program according to claim <sup>27</sup>~~21~~, wherein: the determining code attempts to communicate with a neighbor of the target device; and the neighbor is determined to be active if an attempted communication is successful.

<sup>30</sup>  
~~24~~. (previously presented) The computer program according to claim <sup>27</sup>~~21~~, further comprising code to locate a neighbor of the target device.

<sup>31</sup>  
~~25~~. (previously presented) The computer program according to claim <sup>30</sup>~~24~~, wherein the locating code comprises:

code to generate a neighbor table for the network; and

code to consult the neighbor table to locate the neighbor of the target device.

<sup>32</sup>  
~~26~~. (previously presented) The computer program according to claim ~~25~~<sup>31</sup>, wherein the generating code comprises:

code to poll the target device;  
code to receive a response from the target device; and  
code to construct the neighbor table based on the response.

C1  
<sup>33</sup>  
~~27~~. (previously presented) The computer program according to claim ~~26~~<sup>32</sup>, wherein:  
the polling code performs the polling performed periodically; and  
the computer program further comprises code to update the neighbor table based on the periodic polling.

<sup>34</sup>  
~~28~~. (previously presented) The computer program according to claim ~~26~~<sup>32</sup>, wherein:  
the response comprises a network address of the neighbor; and  
the neighbor table indexes the target device to the network address of the neighbor.

<sup>35</sup>  
~~29~~. (previously presented) The computer program according to claim ~~27~~<sup>33</sup>, wherein the target device comprises a router or a switch, and the neighbor comprises a router or a switch.

<sup>38</sup>  
~~30~~. (previously presented) A network system comprising:  
a first device;  
a second device; and  
a third device located in a path between the first device and the second device on a network;  
wherein the first device comprises:  
a computer including a processor; and  
a memory which stores executable code which when executed by said processor causes said computer to (i) send a packet to the second device to determine if the second device is active, (ii) if the second device is not active, send a packet to the third device to determine if the third device is active, and (iii) if the third device is determined to be active, identify the second device as a failed device.

C

<sup>39</sup>  
~~31~~. (previously presented) The network system according to claim <sup>38</sup>~~30~~, wherein the first device comprises a computer, the second device comprises a switch or a router, and the third device comprises a switch or a router.

C1 <sup>11</sup>  
~~32~~. (previously presented) The method according to claim 1, wherein the attempting to communicate with the target device involves sending a communication to said target device.

<sup>12</sup>  
~~33~~. (previously presented) The method according to claim <sup>11</sup>~~32~~, wherein the attempting to communicate with the one or more neighbors of the target device involves sending a communication to said one or more neighbors of the target device.

<sup>14</sup>  
~~34~~. (previously presented) The method according to claim <sup>13</sup>~~11~~, wherein the attempting to communicate with the target device involves sending a communication to said target device.

<sup>15</sup>  
~~35~~. (previously presented) The method according to claim <sup>14</sup>~~34~~, wherein the attempting to communicate with the identified neighbor involves sending a communication to said identified neighbor.

<sup>25</sup>  
~~36~~. (previously presented) The apparatus according to claim <sup>14</sup>~~12~~, wherein the executable code causes the host computer to attempt to with the target device by sending a communication to said target device.

<sup>24</sup>  
~~37~~. (previously presented) The apparatus according to claim <sup>25</sup>~~36~~, wherein the executable code causes the host computer to determine if the target device has an active neighbor by sending a communication to said one or more neighbors of the target device.

<sup>26</sup>  
~~38~~. (previously presented) The computer program according to claim <sup>27</sup>~~21~~, wherein the code for attempting to communicate with the target device includes code for attempting to communicate by sending a communication to said target device.

Appl. No. : 09/401,874  
Amendment Dated : November 14, 2003  
Reply to Office Action of : August 27, 2003

Atty. Docket No. 113794.124 US1

37  
39. (previously presented) The computer program according to claim 38, wherein the code for determining if the target device has an active neighbor includes code for determining if the target device has an active neighbor by sending a communication to said one or more neighbors of the target device.

---